VANADIUM CORPORATION OF AMERICA
(VCA) NATURITA MILL, SAMPLING BUILDING AND
ORE RECEIVING PLATFORM
approximately tree miles northwest of Naturita,
between Colorado State Highway and
the San Miguel River
Vicinity of Naturita
Montrose County
Colorado

HAER No. CO-81-C

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Denver, Colorado 80225-0287

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HISTORIC AMERICAN ENGINEERING RECORD

VANADIUM CORPORATION OF AMERICA (VCA) NATURITA MILL,
SAMPLING BUILDING AND ORE RECEIVING PLATFORM

HAER No. CO-81-C

Location: In southeast quadrant of mill complex, north of Office Building, approximately three miles northwest of Naturita, between Colorado State Highway 141 to the southwest and the San Miguel River to the northeast; in the NW1/4 of the SW1/4 of Section 14, Township 46 North, Range 16 West

Date of Construction: 1960-61

Designer: VCA Drafting Department - Durango

Builder: Built by VCA employees working under the direction of Troy Newland, master mechanic, Tom Kelly, assistant master mechanic, and Bob Newland, mill supervisor

Present Owner: Cyprus-Amax Minerals Corporation, 9100 E. Mineral Circle, Englewood, CO, 80112

Present Use: Vacant / Not in Use

Significance: The VCA Naturita Mill Sampling Building was constructed in 1960-61 as part of an effort to reconstruct the facility as an experimental uranium and vanadium ore concentrating facility. Between 1958 (when the milling operation had closed) and 1961, VCA had been paying miners to ship raw ore to the company's Durango mill. By first concentrating the ore at Naturita, VCA hoped to greatly reduce the volume of ore shipped to Durango, and correspondingly reduce the company's shipping costs. In the end, however, the cost to concentrate the ore at Naturita was greater than the savings gained by reducing the tonnage shipped to Durango. As a result, the concentrating facility was not in operation for long. It closed in early 1963. During this two year period, the Sampling Building was utilized in the concentrating process. When the ore arrived at the mill, it was first deposited at the Weighing Station and Office where it was allotted a serial number identifying who produced it and where it had been mined. From the Weighing Station and Office, the ore was brought here, to the Sampling Building, where it was sorted, crushed, and a small percentage was separated out to be chemically analyzed in an assaying process

When it arrived at the Sampling Building, the ore was first placed on the ore receiving platform, located outside. Here, the ore was put

through an 8-inch mesh sorter known as a "grizzly." Any ore that was too big to pass through the grizzly had to be broken up by hand until it was small enough to fit through. The ore next dropped through a bin to a crusher where it was reduced to minus 1/2-inch mesh.[1] The ore was then moved by a magnetic conveyor[2] into the Sampling Building where it was dropped into bucket elevators carried by a conveyor belt.

Every tenth bucket was tripped so that a random ten percent of the ore was split off for chemical analysis. This ten percent of the ore was then put through a set of steel roll crushers and dropped into a second set of bucket elevators. Once again, ten percent of this ore (one percent of the total ore pile) was split off and put through a 3/8-inch or smaller mesh screen. Meanwhile, the remaining ore sample was routed back to rejoin the main ore pile. The small amount of ore that had gone through the 3/8-inch mesh screen was then put into a "cone splitter," a device which separated the ore into two equal-sized and random samples. After being divided in the cone splitter, one-half of the ore sample was placed in a smaller crusher which reduced the ore to between 1/8 and 1/4-inch mesh. This ore was then put through another cone splitter. One-half of this split yielded an ore sample that weighed between two and five pounds. This was put in a pan and placed in a drying oven for twelve to sixteen hours.

The ore sample was brought out of the oven on the next days shift and put through a "disc pulverizer" which reduced it to an extremely fine minus 200-inch mesh (approximately to the consistency of flour). This material was then put through yet another cone splitter. One-half of the ore that came out of this cone splitter was then placed in a belt-driven V-shaped blender, where it was thoroughly blended together for one-half hour. The ore sample was then taken from the blender and placed on a clean sheet of paper. After being rolled in the paper, the sample was divided into five equal portions and placed into five 2" by 5" envelopes. Each envelope was labeled with a serial number that had been allotted to the ore at the Weighing Office and Station. One envelope was taken to the laboratory, one envelope was sent to the ore producer, one was sent to the Atomic Energy Commission in Grand Junction, and two envelopes were stored in cupboards in the mill warehouse. The envelope that was taken to the laboratory was chemically analyzed in an assay process to determine its relative uranium and vanadium values.

In the meantime, the main ore body was transported from the ore

receiving platform outside the Sampling Building for the remainder of the concentrating process. After leaving the Sampling Building, the ore was subsequently crushed, agitated in an acid and water solution, thickened, and dried. When completed, the concentrating process produced a uranium and vanadium concentrate in the form of dry, marble-sized, pellets. This material was placed in large concrete storage bins from where it was picked up by a rubber-tired loader and deposited into trucks for transport to VCA's mill in Durango. (Re: HAER No. CO-81, pages 18 - 19.)

General Description: The Sampling Building was a large, single-story, rectangular building with a mezzanine over the north-eastern two-thirds. An associated feature was the large, semicircular concrete ore receiving platform, located to the southeast of the building across from the mill's Weighing Office and Station (HAER No. CO-81-B).

The building was constructed of steel post and beam framework, supported by a concrete foundation and slab. Exterior sheathing (walls and roof) was unpainted corrugated metal. The roof was composed of a low-sloped gable over the north-eastern two-thirds, with a more steeply sloped shed over the western third. Doors were hollow metal, and the few randomly placed windows were wire-glass set in steel industrial sash.

The building interior consisted of two rooms, each roughly square. A small office area was caged-off in the west corner of the southwest room. Although most of the original equipment was missing at the time of field survey, two small hoists with chain drives and bucket attachments were still in place in the center of the northeast room, connecting ground and mezzanine levels.

The ore receiving platform level, approximately twenty-five feet above Sampling Building level, dropped abruptly at a concrete retaining wall between the platform and the building. The platform consisted of a central steel grizzly (an oversized screen for separating coarse ore chunks - in this case, over 12x12 inches - from smaller pieces), approximately 17 feet square, and low, perimeter concrete walls, which radiated away from the grizzly, dividing the platform into segments for ore stockpiling. Below the platform was a large room, accessed through an opening in the retaining wall, with a timber and steel platform and chute system directly below the grizzly. This room opened across from a large doorway into the Sampling Building. The Sampling Building

was also connected to the ore receiving platform at its northeast end by a steel stair and catwalk (mezzanine level).

1.A measurement of minus 1/2-inch mesh means that the individual granules of ore have a diameter of 1/2-inch or less.

2.The conveyor was magnetized to hold back a variety of metal objects that had inadvertently found their way into the ore at the mine. Such items as nails, bolts, screws, and even hammers and wrenches, were routinely caught by the magnetic conveyor.